

GAS PRESSURE REGULATORS AND FILTERS

MAXITROL®

www.maxitrol.com

⚠ WARNING

Service and installation must be performed by a trained/experienced service technician.

All products used with combustible gas **must** be installed and used **strictly** in accordance with the instructions of the Original Equipment Manufacturer (OEM) and with all applicable government codes and regulations, e.g. plumbing, mechanical, and electrical codes and practices. All Maxitrol products should be installed and operated in accordance with Maxitrol Safety Warning Instructions.

Maxitrol is NOT responsible for any errors or omissions in reliance by anyone of any information set forth in this catalog without additional reference to local requirements and applicable ordinances or codes.

The products in this catalogue comply with EU legislation. The technical specifications refer to the CE certification. Additional international approvals and certifications, e.g., CSA and UL, are available upon request.



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RVLM SERIES

RUBBER SEAT POPPET DESIGN

The compact RV poppet regulators are designed primarily for main burner and pilot load applications. Typical applications include residential and commercial cooking appliances, barbecues, hearth products, and pilot lines. Maxitrol rubber seat poppet models offer the ultimate in design features and performance capabilities to meet your specific appliance or utility requirements.

Specifications

- **Pipe Sizes:** Rp 1/8 to Rp 3/8 threaded connections according to ISO 7-1/EN10226-1
- **Housing Material:** Aluminum
- **Internal Components Material:** Steel, aluminum, elastomer
- **Mounting:** Suitable for multi-positional mounting. Other than upright position will result in a slight difference in outlet pressure. Install with gas flowing as indicated by the arrow on bottom casting.
- **Construction and Design/Certifications:** According to the Gas Appliances Regulation (EU) 2016/426 and EN 88-1
- **Fuel Gases:** Suitable for gases of EN 437
- **Maximum Inlet Pressure:** 10 kPa
- **Ambient Temperature Range:** -15 °C to 80 °C
- **Capacities:** See flow chart, page 18

Model Designations

Models having a suffix letter or a combination of suffix letters listed below indicates the design modifications described.

- **C.....** Convertible regulators*; preset to deliver outlet pressures for either natural or LP gases (RV20, RV47, RV48).
- **L** Integral vent limiting orifice as the breather hole – with dust cap.
- **M ...** “Rp” parallel thread conforms to ISO 7-1/EN10226-1, where pressure tight joints are made on the threads.
- **SR...** Side pressure tap; right side** Rp 1/8 (RV20, RV47, RV48).
- **S** Side pressure tap; left side** Rp 1/8 (RV20, RV47, RV48).
- **V.....** Threaded vent connector, 5/16-24 for Rp 1/8 tubing connection (RV20) – with dust cap.

* Convertible regulators are designed to deliver either of two fixed outlet pressures for natural or LP gases.
RV20C: 1.0 kPa (NG); 2.5 kPa (LP)
RV47C, RV48C: 1.0 or 1.25 or 1.5 kPa (NG); 2.5 or 2.75 kPa (LP)

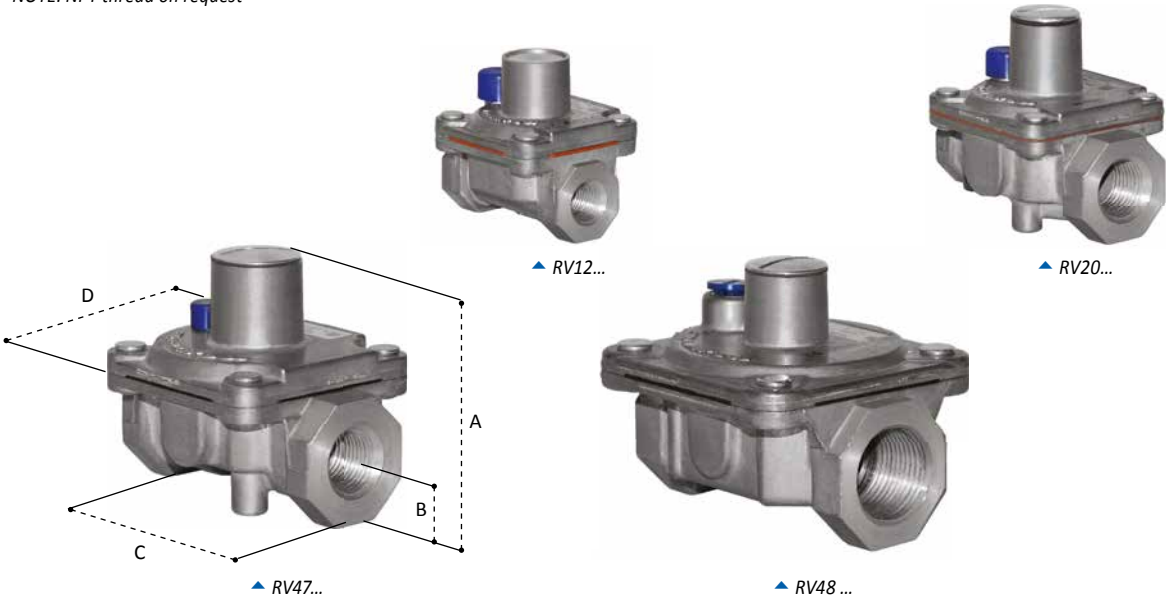
** Left and right is determined when viewing regulator from outlet side with stack up.

Dimensions

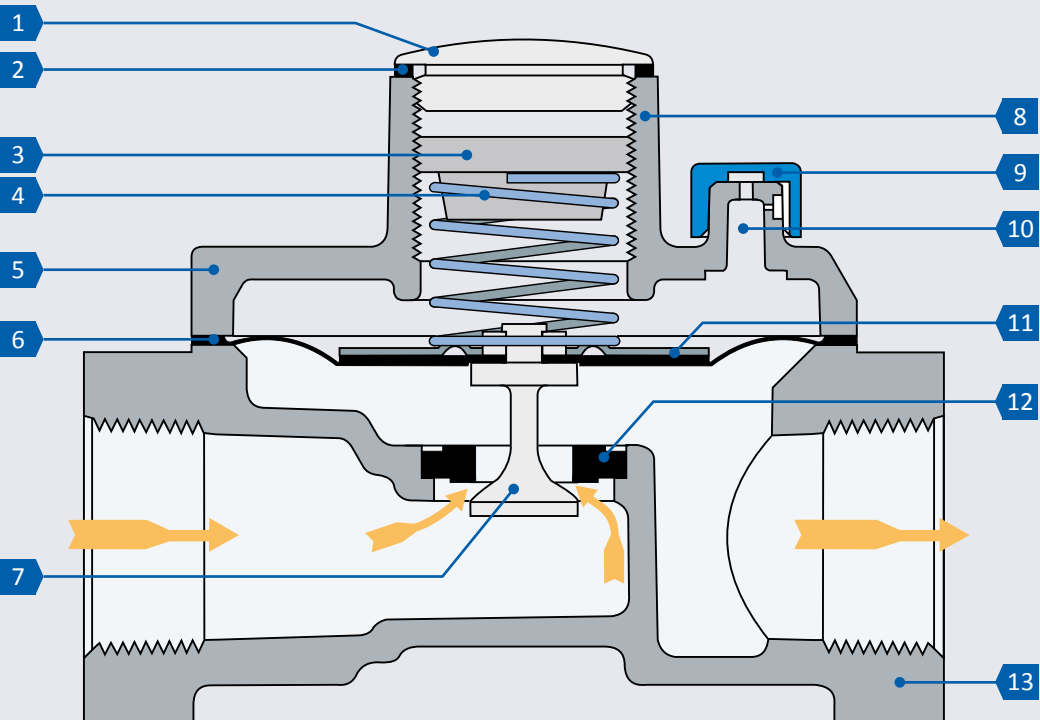
Model	Pipe Sizes	Swing Radius	Dimensions			
			A	B	C	D
RV12...	Rp 1/8	35 mm	43 mm	10 mm	43 mm	35 mm
RV20...	Rp 1/4, Rp 3/8	41 mm	54 mm	13 mm	61 mm	45 mm
RV47...	Rp 3/8, Rp 1/2	48 mm	64 mm	16 mm	75 mm	57 mm
RV48...	Rp 1/2, Rp 3/4	51 mm	70 mm	19 mm	86 mm	76 mm

NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.

NOTE: NPT thread on request



Rubber Seat Poppet Design



NOTE: Diagrams are graphical representations only and may differ from actual product.

- 1 Seal Cap
- 2 Seal Cap Gasket
- 3 Adjusting Screw
- 4 Spring
- 5 Top Housing
- 6 Diaphragm
- 7 Stem & Valve
- 8 Stack
- 9 Dust Cap
- 10 Vent
- 11 Diaphragm Plate
- 12 Rubber Seat
- 13 Bottom Housing

RV SERIES

STRAIGHT-THRU-FLOW DESIGN

Maxitrol's original Straight-Thru-Flow (STF) design regulators are non-lockup type regulators for high capacities at low inlet pressures. The difference between STF design and other type regulators is the conical valve. The cone principal permits gas to flow straight through the regulator without changing directions. Frictional flow resistance is reduced, resulting in greater capacity. An improved flow pattern provides accurate, sensitive regulation at extremely low pressure differentials. Typical applications include residential, commercial, and industrial gas-fired appliances and equipment used on low or medium pressure gas supplies.

Specifications

- **Pipe Sizes:**
 - RV52, RV53, RV61, RV81, RV91, RV111: Rp ½ to Rp 3 threaded connections according to ISO 7-1/EN10226-1
- **Housing Material:**
 - RV52, RV53, RV61, RV81, RV91, RV111: Aluminum
- **Internal Components Material:** Steel, aluminum, elastomer
- **Mounting:** RV52, RV53, RV61 are suitable for multi-positional mounting. Other than upright position will result in a slight difference in outlet pressure. If ball check vent limiting device is installed, mount in an upright position only. RV81, RV91, RV111 upright position only. Install with gas flowing as indicated by the arrow on bottom casting.
- **Construction and Design/Certifications:** According to the Gas Appliances Regulation (EU) 2016/426 and EN 88-1
- **Fuel Gases:** Suitable for gases of EN 437
- **Maximum Inlet Pressure:**
 - RV52: 10 kPa
 - RV53, RV61, RV81, RV91, RV111: 20 kPa
- **Ambient Temperature Range:** -15 °C to 80 °C
- **Capacities:** See flow chart, page 19
- **Model Designations:** Models having a suffix letter, or a combination of suffix letters, listed below indicates the design modifications described.
(M) B.S.P. - PL parallel thread "Rp" - conforms to ISO 7-1/EN10226-1, where pressure tight joints are made on the threads.

Dimensions

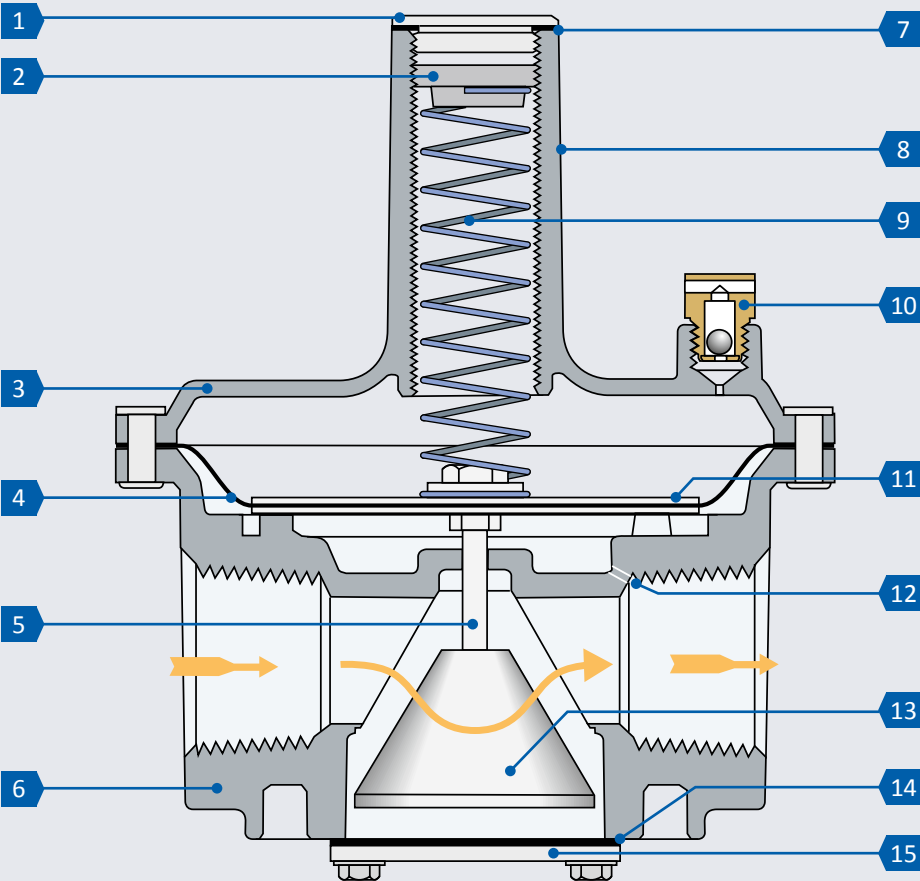
Model	Pipe Sizes	Swing Radius	Dimensions			
			A	B	C	D
RV52...	Rp ½, Rp ¾	91 mm	124 mm	32 mm	83 mm	81 mm
RV53...	Rp ¾, Rp 1	99 mm	132 mm	33 mm	99 mm	95 mm
RV61...	Rp 1, Rp 1 ¼	122 mm	164 mm	41 mm	138 mm	111 mm
RV81...	Rp 1 ¼, Rp 1 ½	162 mm	213 mm	51 mm	178 mm	153 mm
RV91...	Rp 2	216 mm	275 mm	60 mm	232 mm	165 mm
	Rp 2 ½	212 mm	267 mm	62 mm	232 mm	181 mm
RV111...	Rp 2 ½, Rp 3	284 mm	373 mm	89 mm	324 mm	229 mm

NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.

NOTE: NPT thread on request



Straight-Thru-Flow Design



NOTE: Diagrams are graphical representations only and may differ from actual product.

- 1 Welch Plug/Seal Cap
- 2 Vibration Resistant Adjusting Screw
- 3 Top Housing
- 4 Diaphragm
- 5 Stem
- 6 Bottom Housing
- 7 Seal Cap Gasket
- 8 Stack
- 9 Spring
- 10 Vent Limiting Device
- 11 Diaphragm Plates
- 12 Sensing Hole
- 13 Valve
- 14 Bottom Plate Gasket
- 15 Bottom Plate

325 SERIES

LEVER ACTING DESIGN

Maxitrol's 325 series regulators are for use on residential, commercial, and industrial applications. The 325 series features a high leverage valve linkage assembly to deliver positive dead-end lockup. The regulators are capable of precise control from full flow down to pilot flow.

Specifications

- **Pipe Sizes:** Rp ¾ to Rp 1 ½ threaded connections according to ISO 7-1/EN10226-1
- **Housing Material:** Aluminum
- **Internal Components Material:** Steel, aluminum, brass, elastomer
- **Mounting:** Suitable for multi-positional mounting. Other than upright position will result in a slight difference in outlet pressure. If ball check vent limiting device is installed, mount in an upright position only. Install with gas flowing as indicated by the arrow on bottom casting.
- **Construction and Design/Certifications:** According to the Gas Appliances Regulation (EU) 2016/426 and EN 88-1
- **Fuel Gases:** Suitable for gases of EN 437
- **Maximum Inlet Pressure:** 100 kPa
- **Ambient Temperature Range:** -15 °C to 80 °C
- **Capacities:** See flow chart, page 20

Dimensions

Model	Pipe Size	Swing Radius	Dimensions		
			A	C	D
325-3...	Rp ¾, Rp ½	76 mm	89 mm	108 mm	98 mm
325-5...	Rp ½, Rp ¾, Rp 1	124 mm	133 mm	149 mm	138 mm
325-7...	Rp 1 ¼, Rp 1 ½	156 mm	184 mm	203 mm	178 mm

NOTE: NPT thread on request

NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.



▲ 325-5...

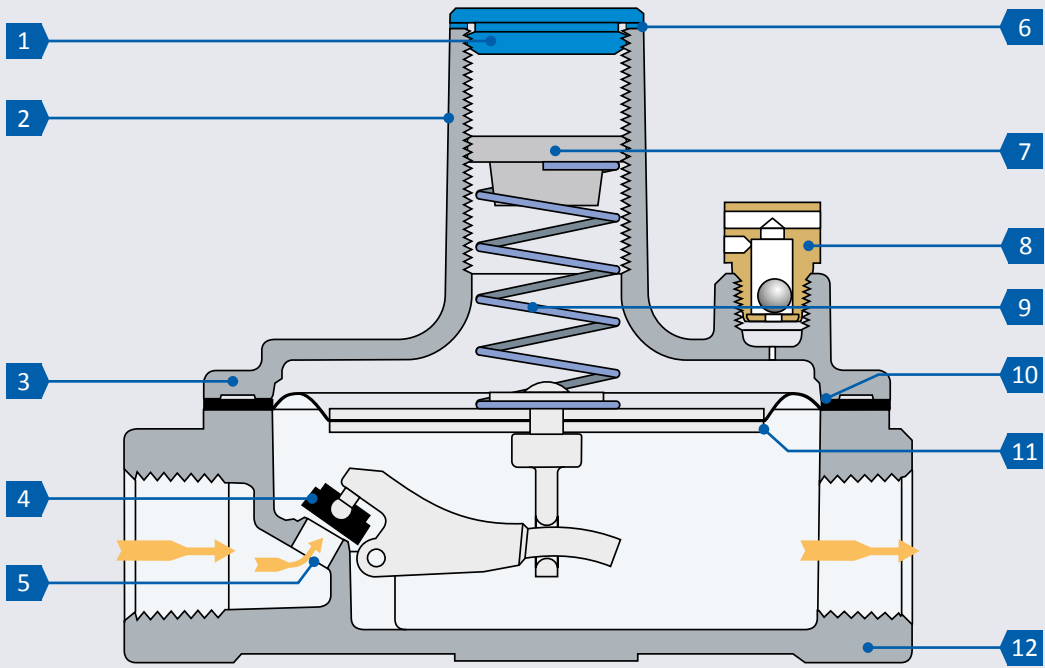


▲ 325-7...



▲ 325-3...

Lever Acting Design



NOTE: Diagrams are graphical representations only and may differ from actual product.

- 1 Seal Cap
- 2 Stack
- 3 Top Housing
- 4 Rubber Valve
- 5 Valve Seat
- 6 Seal Cap Gasket
- 7 Adjusting Screw
- 8 Vent Limiting Device
- 9 Spring
- 10 Diaphragm
- 11 Diaphragm Plates
- 12 Bottom Housing

R/RS SERIES

BALANCED VALVE DESIGN

The R & RS series' double diaphragm balanced valve design makes it possible to maintain steady outlet pressure control with widely varying inlet pressures. The regulator is physically small yet has exceptional capacity characteristics. R & RS series regulators are intended for use with both main burner and pilot load applications. They are ideally suited for use with infrared heaters and pilot lines on large industrial heaters and boilers.

Specifications

- **Pipe Sizes:** Rp 3/8 to Rp 1 threaded connections according to ISO 7-1/EN10226-1
- **Housing Material:** Aluminum
- **Internal Components Material:** Steel, aluminum, brass, elastomer
- **Mounting:** Suitable for multi-positional mounting. Other than upright position will result in a slight difference in outlet pressure. If ball check vent limiting device is installed, mount in an upright position only. Install with gas flowing as indicated by the arrow on bottom casting.
- **Construction and Design/Certifications:** According to the Gas Appliances Regulation (EU) 2016/426 and EN 88-1
- **Fuel Gases:** Suitable for gases of EN 437
- **Maximum Inlet Pressure:** 36 kPa
- **Ambient Temperature Range:** -15 °C to 80 °C
- **Capacities:** See flow chart, page 21
- **Model Designations:** Models having a suffix letter, or a combination of suffix letters, listed below indicates the design modifications described.
(S) S denotes models with a nitrile rubber bonded to aluminum valve.
(M) B.S.P. - PL parallel thread "Rp" - conforms to ISO 7-1/EN10226-1, where pressure tight joints are made on the threads.

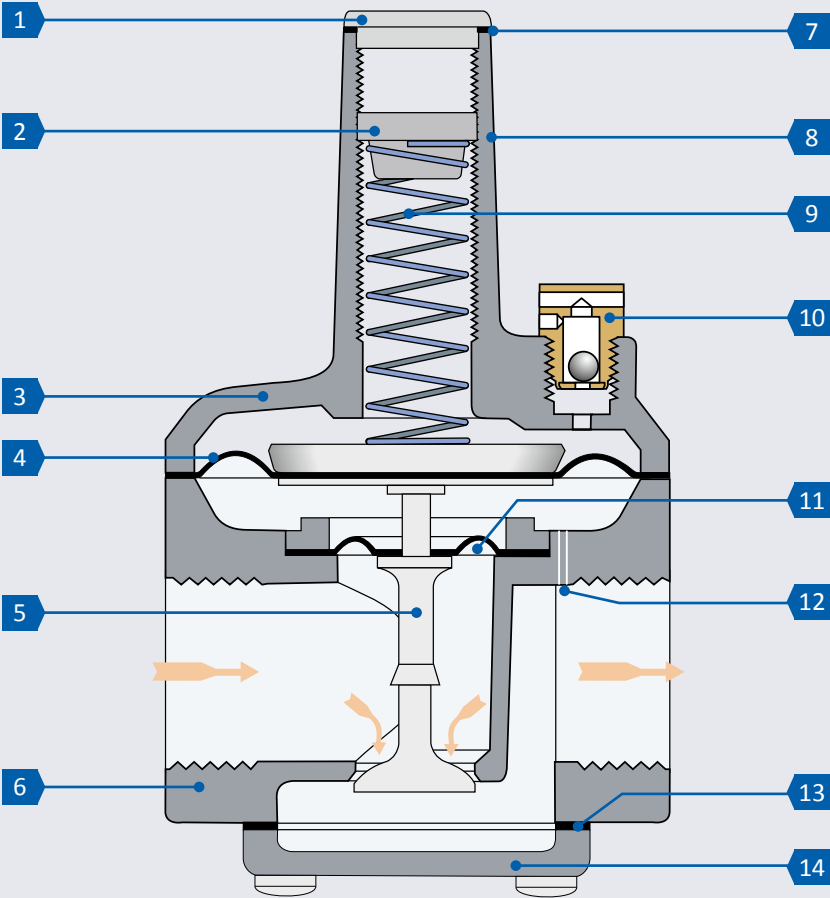
Dimensions

Model	Pipe Sizes	Swing Radius	Dimensions			
			A	B	C	D
R400S(M)...	Rp 3/8, Rp 1/2	60 mm	83 mm	24 mm	51 mm	51 mm
R500S(M)...	Rp 1/2, Rp 3/4	90 mm	119 mm	30 mm	79 mm	76 mm
R600S(M)...	Rp 3/4, Rp 1	110 mm	145 mm	38 mm	99 mm	103 mm

NOTE: NPT thread on request

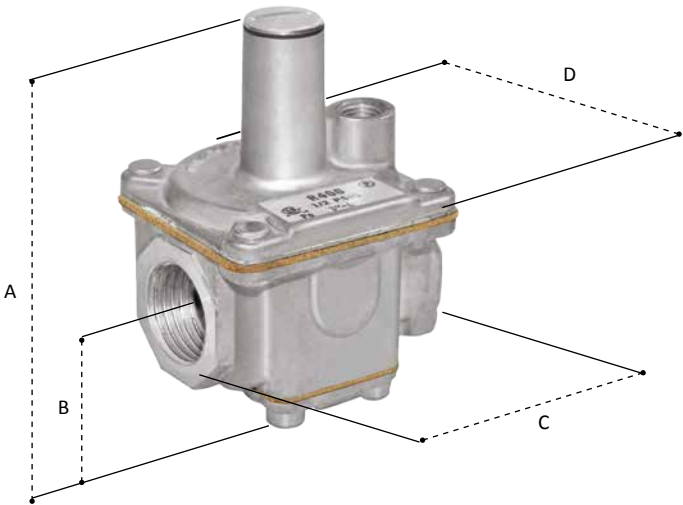
NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.

R/RS Balanced Valve Design



NOTE: Diagrams are graphical representations only and may differ from actual product.

- 1 Welch Plug/Seal Cap
- 2 Vibration Resistant Adjusting Screw
- 3 Top Housing
- 4 Regulating Diaphragm
- 5 Stem & Valve
- 6 Bottom Housing
- 7 Seal Cap Gasket
- 8 Stack
- 9 Spring
- 10 Vent Limiting Device
- 11 Balancing Diaphragm
- 12 Sensing Hole
- 13 Bottom Plate Gasket
- 14 Bottom Plate



▲ R400S(M)...



▲ R500S(M)..., R600S(M)...

210 SERIES

BALANCED VALVE DESIGN

The 210 series is a lockup characteristic regulator. Its balanced valve design makes it possible to maintain steady outlet pressure control with widely varying inlet pressures. The regulator has an integrated dampening mechanism in the breather outlet and the sensing tube to improve regulating stability and reduce hunting tendencies. The 210 series provides precise regulation over a wide range of pressures and flow rates. Applications include gas-fired boilers, steam generators, industrial furnaces, and ovens.

Specifications

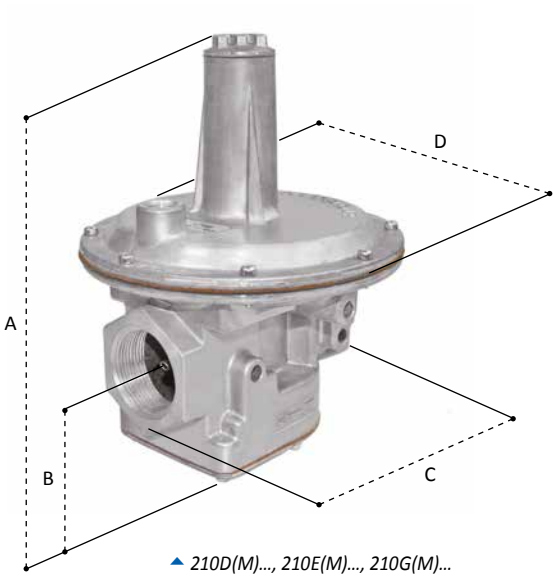
- **Pipe Sizes:**
 - 210D, 210E, 210G: Rp 1 to Rp 3 threaded connections according to ISO 7-1/EN10226-1
 - 210J: DN100 flanged connections according to ISO 7005-2, PN 16
- **Housing Material:**
 - 210D, 210E, 210G, 210J: Aluminum
- **Internal Components Material:** Steel, aluminum, brass, elastomer
- **Mounting:** Mount in an upright position only. Install with gas flowing as indicated by the arrow on the bottom casting. Other than upright position will result in a slight difference in outlet pressure. If ball check vent limiting device is installed, mount in an upright position only. Install with gas flowing as indicated by the arrow on bottom casting.
- **Construction and Design/Certifications:** According to the Gas Appliances Regulation (EU) 2016/426 and EN 88-1
- **Fuel Gases:** Suitable for gases of EN 437
- **Maximum Inlet Pressure:** 85 kPa
- **Ambient Temperature Range:** -15 °C to 80 °C
- **Capacities:** See flow chart, page 22
- **Model Designations:** Models having a suffix letter, or a combination of suffix letters, listed below indicates the design modifications described.
(M) B.S.P. - PL parallel thread "Rp" - conforms to ISO 7-1/EN10226-1, where pressure tight joints are made on the threads.

Dimensions

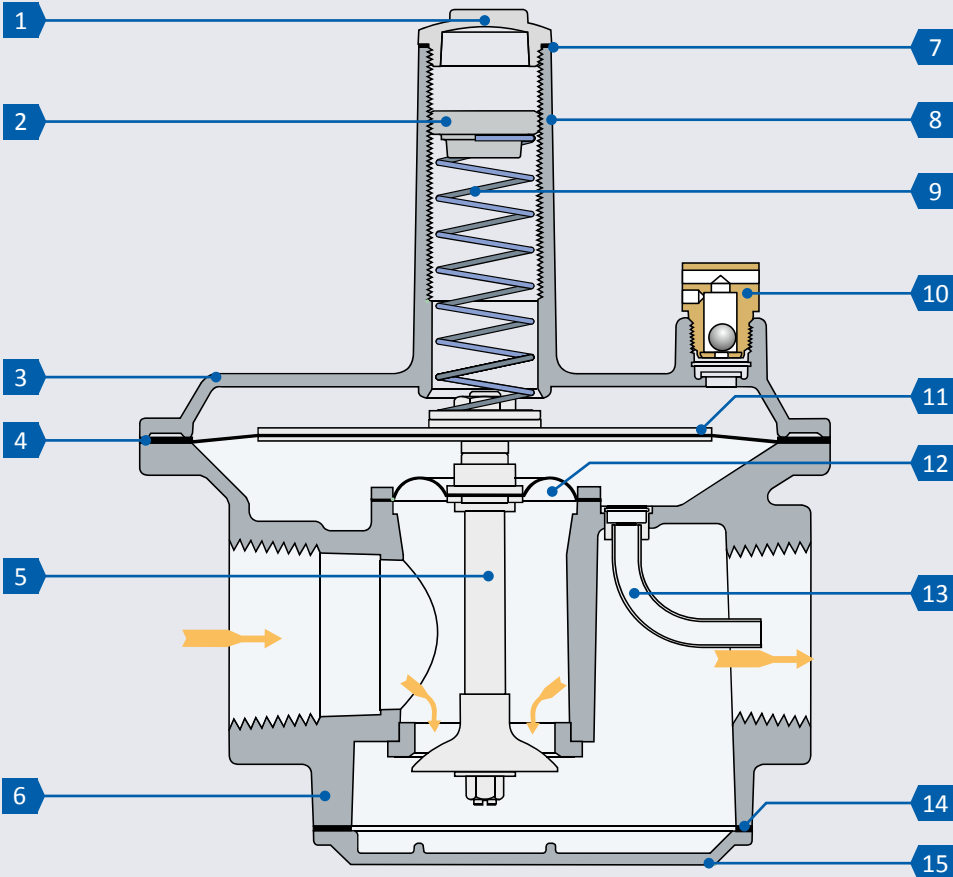
Model	Pipe Size	Swing Radius	Dimensions			
			A	B	C	D
210D(M)...	Rp 1, Rp 1 ¼, Rp 1 ½	138 mm	228 mm	60 mm	152 mm	178 mm
210E(M)...	Rp 1 ½, Rp 2	211 mm	286 mm	75 mm	203 mm	232 mm
210G(M)...	Rp 2 ½, Rp 3	302 mm	419 mm	116 mm	300 mm	343 mm
210J(M)...	DN100	467 mm	616 mm	138 mm	349 mm	457 mm

NOTE: NPT thread on request

NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.



210 Balanced Valve Design



NOTE: Diagrams are graphical representations only and may differ from actual product.

- 1 Welch Plug/Seal Cap
- 2 Vibration Resistant Adjusting Screw
- 3 Top Housing
- 4 Regulating Diaphragm
- 5 Stem & Valve
- 6 Bottom Housing
- 7 Seal Cap Gasket
- 8 Stack
- 9 Spring
- 10 Vent Limiting Device
- 11 Diaphragm Plates
- 12 Balancing Diaphragm
- 13 Sensing Tube
- 14 Bottom Plate Gasket
- 15 Bottom Plate

RZ AND 210Z

ZERO GOVERNOR DESIGN

The RZ and 210Z series are adaptable for air-gas mixing applications. Because of the balanced valve construction, Z-models offer superior performance at an economical price compared with other types of atmospheric regulators.

Maxitrol's RZ and 210Z zero governor model regulators are used for flow control of burners, nozzle mixers, mixing tees and proportional premixers.

Specifications

- **Pipe Sizes:**
 - R400Z(M), R500Z(M), R600Z(M): Rp ¾ to Rp 1 threaded connections according to ISO 7-1/EN10226-1
 - 210DZ, 210EZ, 210GZ: Rp 1 to Rp 3 threaded connections according to ISO 7-1/EN10226-1
 - 210JZ: DN100 flanged connections according to ISO 7005-2, PN 16
- **Housing Material:** Aluminum
- **Internal Components Material:**
 - R400Z(M), R500Z(M), R600Z(M): Steel, aluminum, brass, elastomer
 - 210DZ, 210EZ, 210GZ: Aluminum
 - 210JZ: Aluminum
- **Mounting:** R400Z(M), R500Z(M), R600Z(M) are suitable for multi-positional mounting. Other than upright position will result in a slight difference in outlet pressure. If ball check vent limiting device is installed, mount in an upright position only. 210DZ, 210EZ, 210GZ, 210JZ mount in upright position only. Install with gas flowing as indicated by the arrow on bottom casting.
- **Construction and Design/Certifications:** According to the Gas Appliances Regulation (EU) 2016/426 and EN 88-1
- **Fuel Gases:** Suitable for gases of EN 437
- **Maximum Inlet Pressure:**
 - R400Z(M), R500Z(M), R600Z(M): 10 kPa
 - 210DZ, 210EZ, 210GZ, 210JZ: 36 kPa
- **Ambient Temperature Range:** -15 °C to 80 °C
- **Capacities:** See flow charts, page 21 and 22
- **Model Designations:** Models having a suffix letter, or a combination of suffix letters, listed below indicates the design modifications described.
(M) B.S.P. - PL parallel thread "Rp" - conforms to ISO 7-1/EN10226-1, where pressure tight joints are made on the threads.

Dimensions

Model	Pipe Sizes	Swing Radius	Dimensions			
			A	B	C	D
R400Z(M)...	Rp ¾, Rp ½	60 mm	83 mm	24 mm	51 mm	51 mm
R500Z(M)...	Rp ½, Rp ¾	90 mm	119 mm	30 mm	79 mm	79 mm
R600Z(M)...	Rp ¾, Rp 1	109 mm	144 mm	37 mm	102 mm	98 mm
210DZ(M)...	Rp 1, Rp 1 ¼, Rp 1 ½	138 mm	229 mm	60 mm	152 mm	178 mm
210EZ(M)...	Rp 1 ½, Rp 2	211 mm	286 mm	75 mm	203 mm	232 mm
210GZ(M)...	Rp 2 ½, Rp 3	302 mm	419 mm	116 mm	300 mm	343 mm
210JZ(M)...	DN100	467 mm	616 mm	138 mm	349 mm	457 mm

NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the regulator. Actual production dimensions may vary somewhat from those shown.

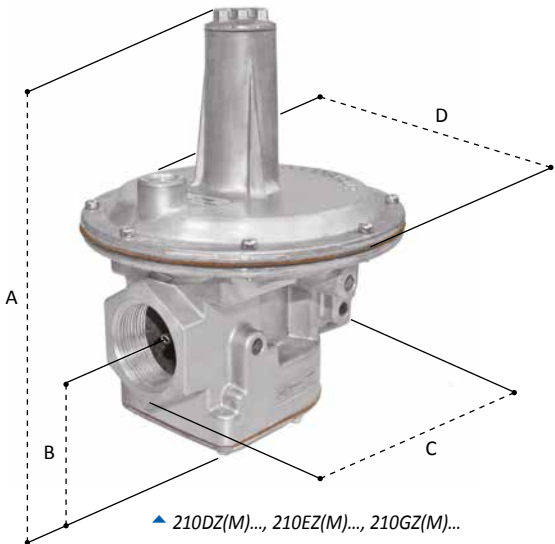
NOTE: NPT thread on request



▲ R400Z(M)..., R500Z(M)..., R600Z(M)...

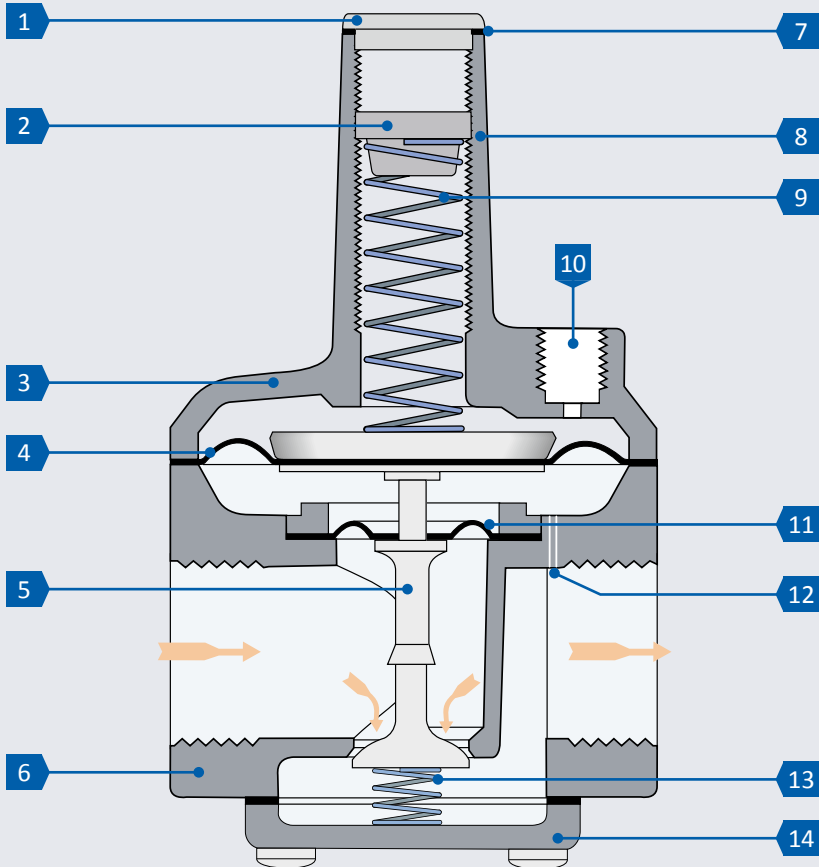


▲ 210JZ(M)...



▲ 210DZ(M)..., 210EZ(M)..., 210GZ(M)...

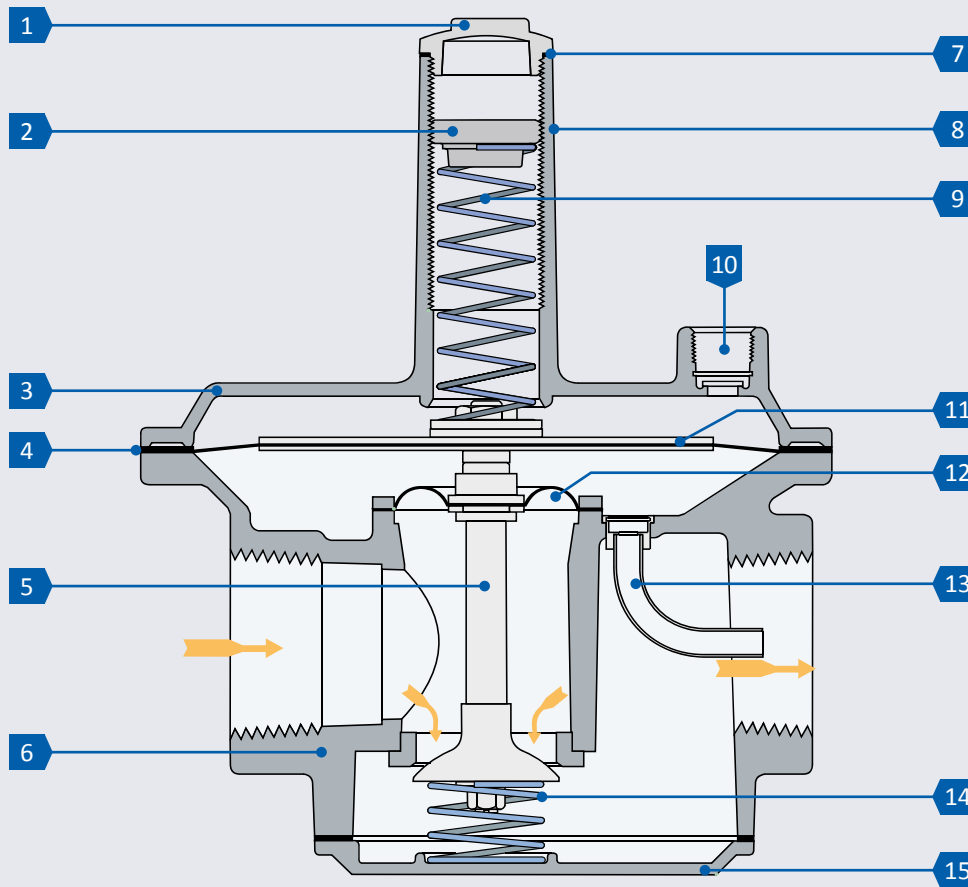
R400Z(M), R500Z(M), R600Z(M)



NOTE: Diagrams are graphical representations only and may differ from actual product.

- 1 Seal Cap
- 2 Adjusting Screw
- 3 Top Housing
- 4 Regulating Diaphragm
- 5 Stem & Valve
- 6 Bottom Housing
- 7 Seal Cap Gasket
- 8 Stack
- 9 Spring
- 10 Vent Connection
- 11 Balancing Diaphragm
- 12 Sensing Hole
- 13 Counter Spring
- 14 Bottom Plate

210DZ, 210EZ, 210GZ, 210JZ



NOTE: Diagrams are graphical representations only and may differ from actual product.

- 1 Seal Cap
- 2 Adjusting Screw
- 3 Top Housing
- 4 Regulating Diaphragm
- 5 Stem & Valve
- 6 Bottom Housing
- 7 Seal Cap Gasket
- 8 Stack
- 9 Spring
- 10 Vent Connection
- 11 Diaphragm Plates
- 12 Balancing Diaphragm
- 13 Sensing Tube
- 14 Counter Spring
- 15 Bottom Plate

SPRING SELECTION

Model	Spring Replacement Number	Spring Code											
		A	B	C	D	E	F	G	H	K	L	M	N
		Outlet Pressure Range (1 kPa = 10 mbar)											
		0.25 – 0.90	0.50 – 1.25	0.50 – 1.50	0.70 – 1.30	0.75 – 2.00	1.00 – 2.00	1.00 – 3.00	1.25 – 3.00	2.50 – 5.50	3.75 – 7.50	5.00 – 10.50	7.00 – 14.00
		Color											
brown	(plated)	green	(plated)	pink	orange	violet	blue	red	yellow	black	label		
RV12...	KIT ...-R1210T	X			X		X	X					
RV20...	KIT ...-R2010	X			X		X	X					
RV47...	KIT ...-R4710	X			X		X	X					
RV48...	KIT ...-R4810	X			X		X		X				
RV52...	KIT ...-R5210	X	X			X		X		X			
RV53...	KIT ...-R5310	X	X			X		X		X	X		
RV61...	KIT ...-R6110	X	X			X			X	X	X		
RV81...	KIT ...-R8110	X	X			X		X		X	X	X	
RV91...	KIT ...-R9110	X	X			X		X		X	X	X	
RV111...	KIT ...-R11110	X	X			X		X		X	X	X	
325-3...	KIT ...-R325C10			X				X		X	X		X
325-5...	KIT ...-R325E10			X				X		X	X		X
325-7...	KIT ...-R8110	X	X			X		X		X	X	X	
R400S...	KIT ...-R400B10	X	X			X		X		X			
R500S...	KIT ...-R5210	X	X			X		X		X			
R600S...	KIT ...-R5310	X	X			X		X		X	X		
210D...	KIT ...-R8110	X	X			X		X		X	X	X	
210E...	KIT ...-R9110	X	X			X		X		X	X	X	
210G...	KIT ...-R11110	X	X			X		X		X	X	X	
210J...	KIT ...-R13110		X			X		X		X	X	X	

NOTE: No spring replacement required for zero pressure regulator models.

ACCESSORIES

The following items are not sold separately. They are delivered with the gas pressure regulators.

Vent Limiting Device: \sqrt{v} Limiter[®]

Maxitrol vent limiting devices eliminate the need to run vent piping to the outside. Vent limiting devices are designed for use indoors and in spaces where limiting the amount of gas escapement due to diaphragm failure is critical. Vent limiting devices should not be used outdoors if they are exposed to the environment.

Optional automatic vent limiting device – ball check permits unobstructed inhalation for fast regulator diaphragm response on opening cycle, but limits gas escapement to be within EN 88 requirements should a diaphragm rupture:

- **12A04:** Use on RV52, RV53, RV61, R400S, R500S, and R600S regulators
- **12A09:** Use on 325-3 regulators
- **12A39:** Use on RV81, RV91, RV111, 325-5, 325-7 and 210 series regulators

Pressure Tap

Pressure tap installed as an optional part of the control. The hose fitting is provided with a captive screw plug. This eliminates the need for an additional fitting with a measuring connection.

- PF10: For RVLM (Poppets) and filters (others upon request).

Dust Cap

Use on vent opening to prevent blockage of breather hole from dust or other foreign particles. Standard on all “L” models with 1/8 threaded vent.

- **13A09:** For Rp 1/8 vent. Press-in plastic cap

Tamper Proof Seals

Permanent pressure sensitive backed paper. Attempted removal of these seals will destroy the face stock, leaving adhesive residue on surface beneath. Therefore, tampering can be easily detected. Available for all threaded models. Outlet pressure printed on seal.

- **101310:** For RV12, RV20L, RV47, RV48, RV52, RV53, RV61, R400S(Z), RV500S(Z), R600S(Z), 325-3, and 325-5
- **101311:** For RV81, RV91, RV111, 210D, 210E, 210G, 325-7



NOTE: When using the vent limiting device, the regulator must be mounted in a horizontal upright position.

NOTE: If no vent limiting device is used, regulator vent must be piped in accordance with government and local codes and regulations.



SIZING A REGULATOR

System Requirements

When sizing a regulator the following must be known:

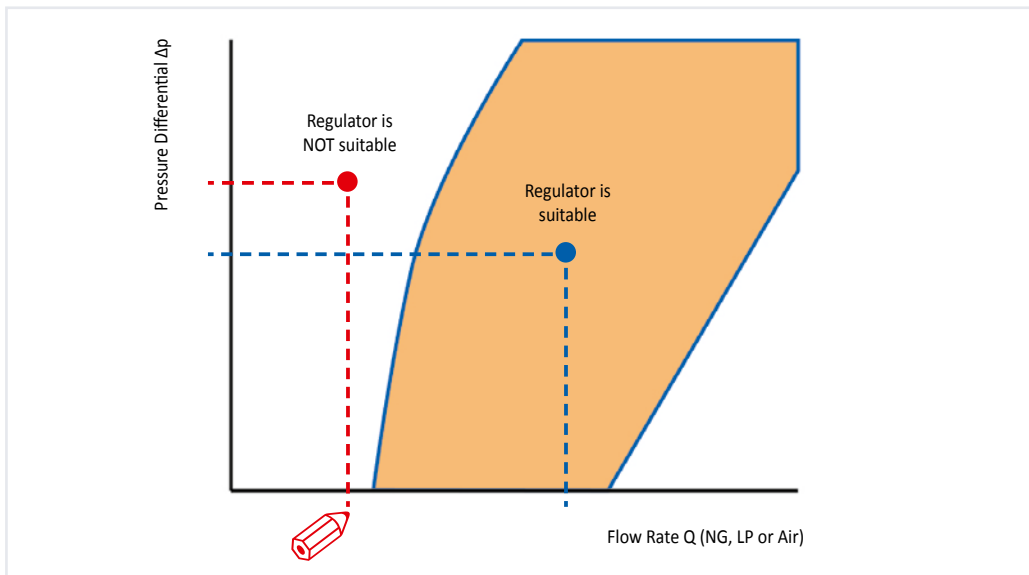
- Fuel Gases
- Available Inlet Pressure
- Desired Outlet Pressure
- Zero Pressure Regulator Application (indicated by model number ending in “Z”)
- Will the regulator control main burner and pilot load OR main burner only?
- Required minimum and maximum flow rate in m³/h or kW
- Pipe Size

In most cases, the manifold pipe size has already been selected on the basis of good engineering practice, and the regulator pipe size should conform to this size.

The capacity of any regulator is not an absolute value but will vary with the application depending on the prevailing differential pressure.

HOW TO DETERMINE THE SUITABLE REGULATOR FROM THE FLOW CHART

Draw a horizontal line with the known differential pressure (inlet pressure minus outlet pressure). Next draw a vertical line with the required flow rate (take care to use the axis with the correct fuel gas). The regulator where both lines cross each other within the range of regulation is the suitable regulator.



NOTE: Please contact Maxitrol directly for more information on sizing a regulator.

NOTE: Service and installation must be performed by a trained/experienced service technician.

LEGEND FOR FLOW CHARTS

- Δp = Pressure Differential in kPa
- Q = Flow Rate in m³/h
- dv = Volumetric Rate of Flow
- f = Friction Factor
- ρ = Density

- Pressure Units: 1 kPa = 10 mbar = 10 hPa
- Air: $dv = 1.00$ $f = 1.00$
- Natural Gas (NG): $dv = 0.64$ $f = 1.24$
- Liquid petroleum gas (LPG): $dv = 1.56$ $f = 0.80$

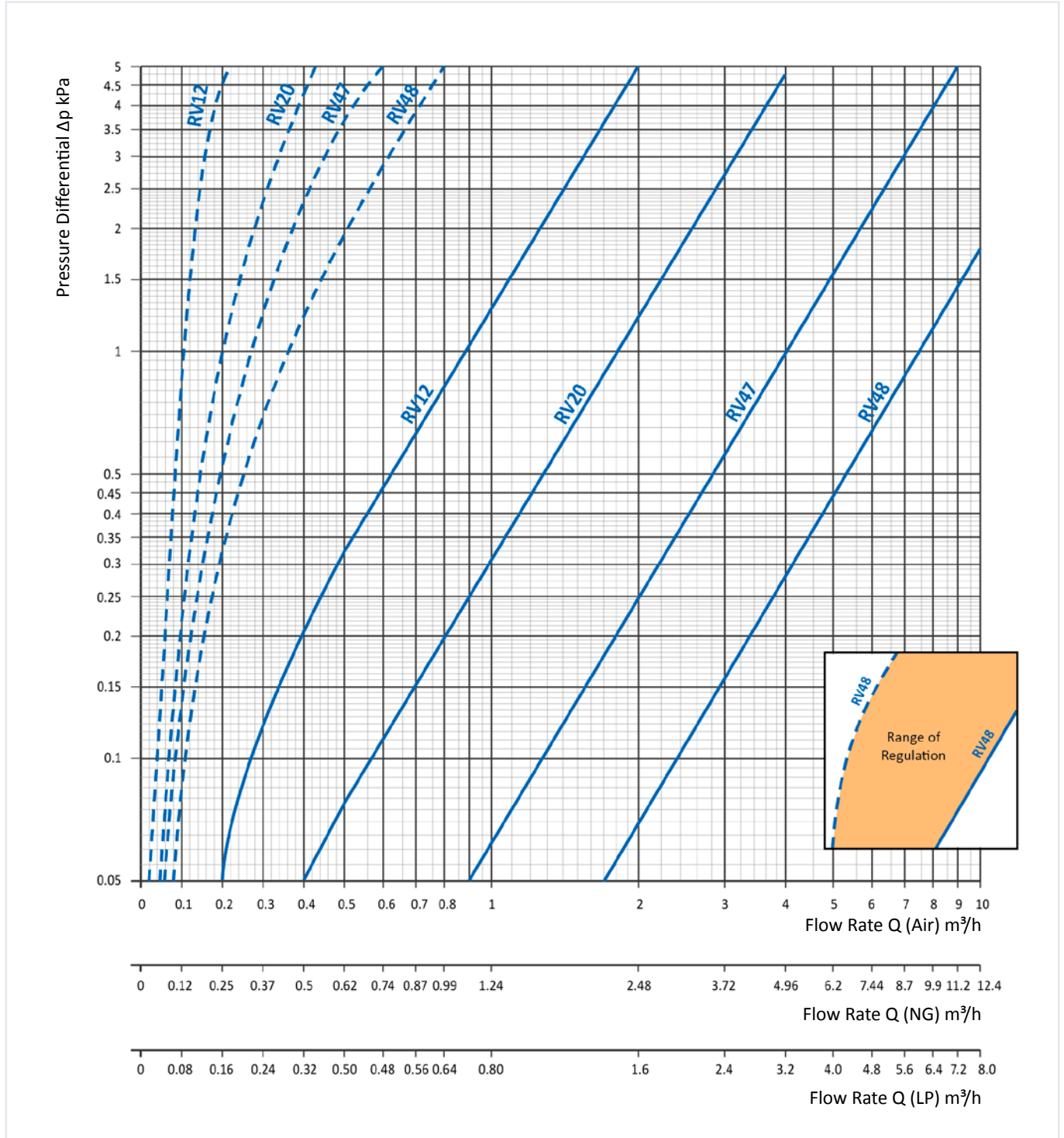
$$dv = \frac{\rho_{\text{gas}}}{\rho_{\text{air}}}$$

$$f = \sqrt{\frac{\rho_{\text{air}}}{\rho_{\text{gas}}}}$$

$$\dot{V}_{\text{gas}} = f \cdot \dot{V}_{\text{air}}$$

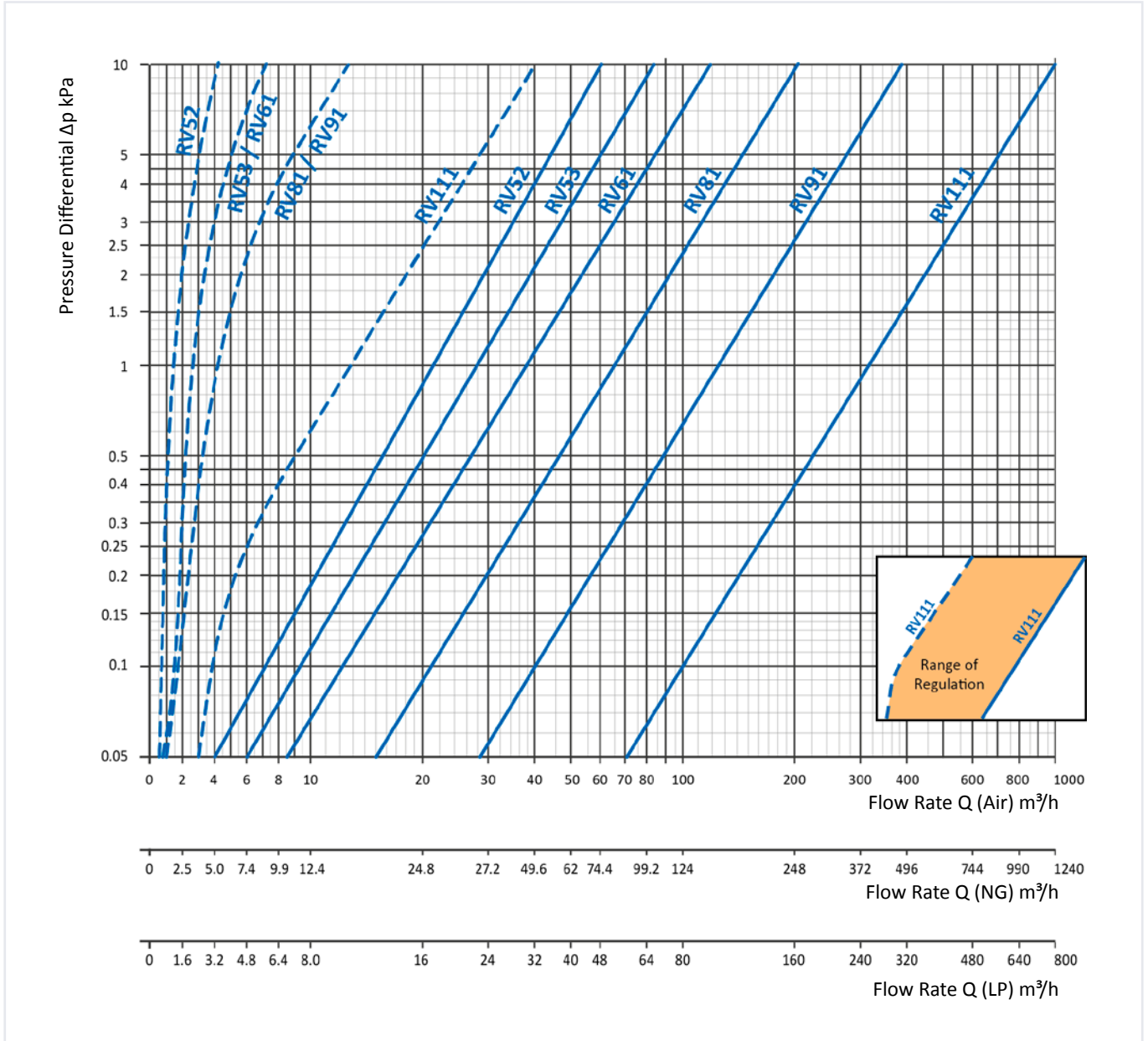
FLOW CHARTS GAS PRESSURE REGULATORS

RVLM Series – Rubber Seat Poppet Design



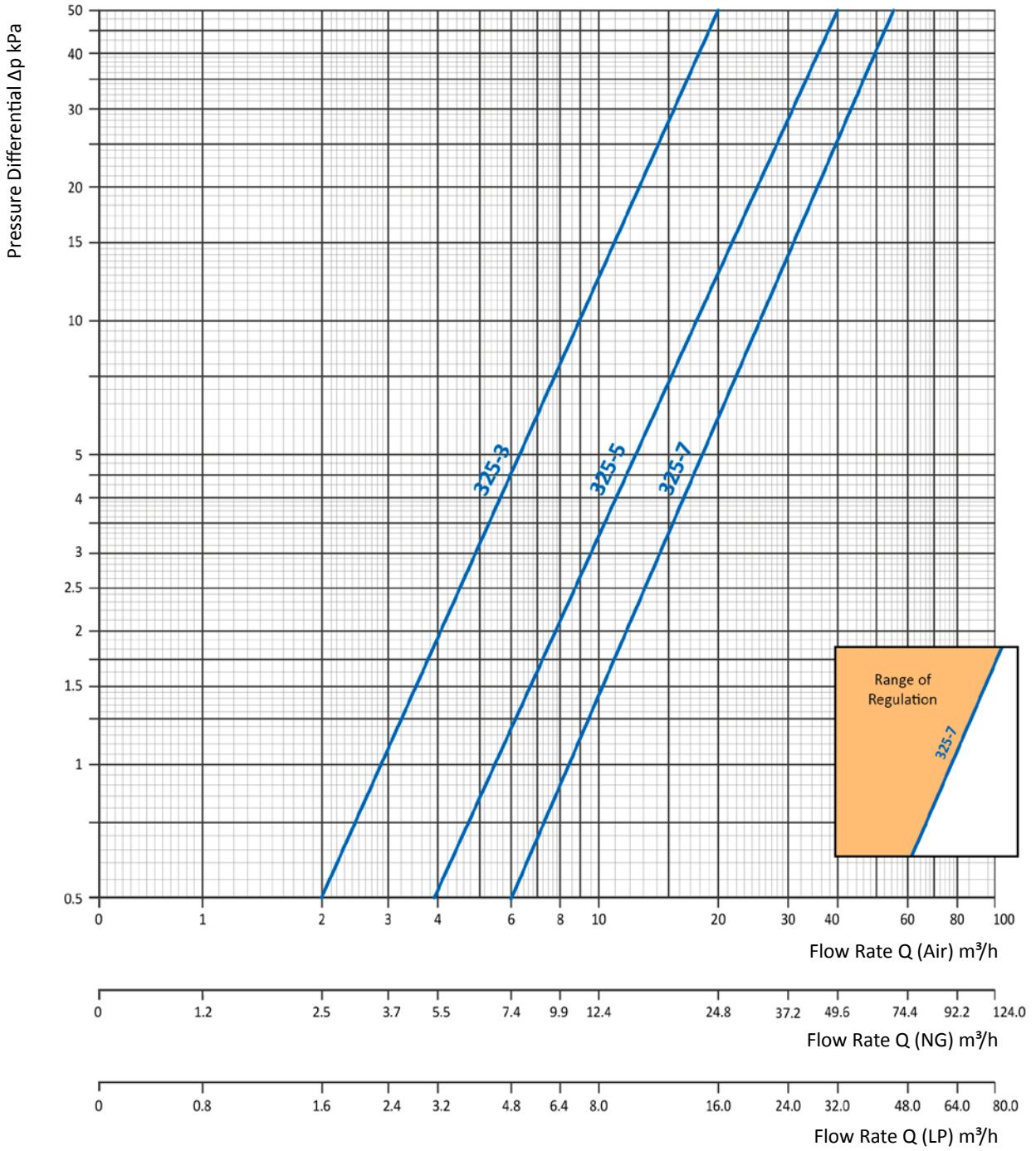
NOTE: The given flow rates are approximate values. Actual flow rates may vary somewhat from those shown.

RV Series – Straight-Through-Flow Design



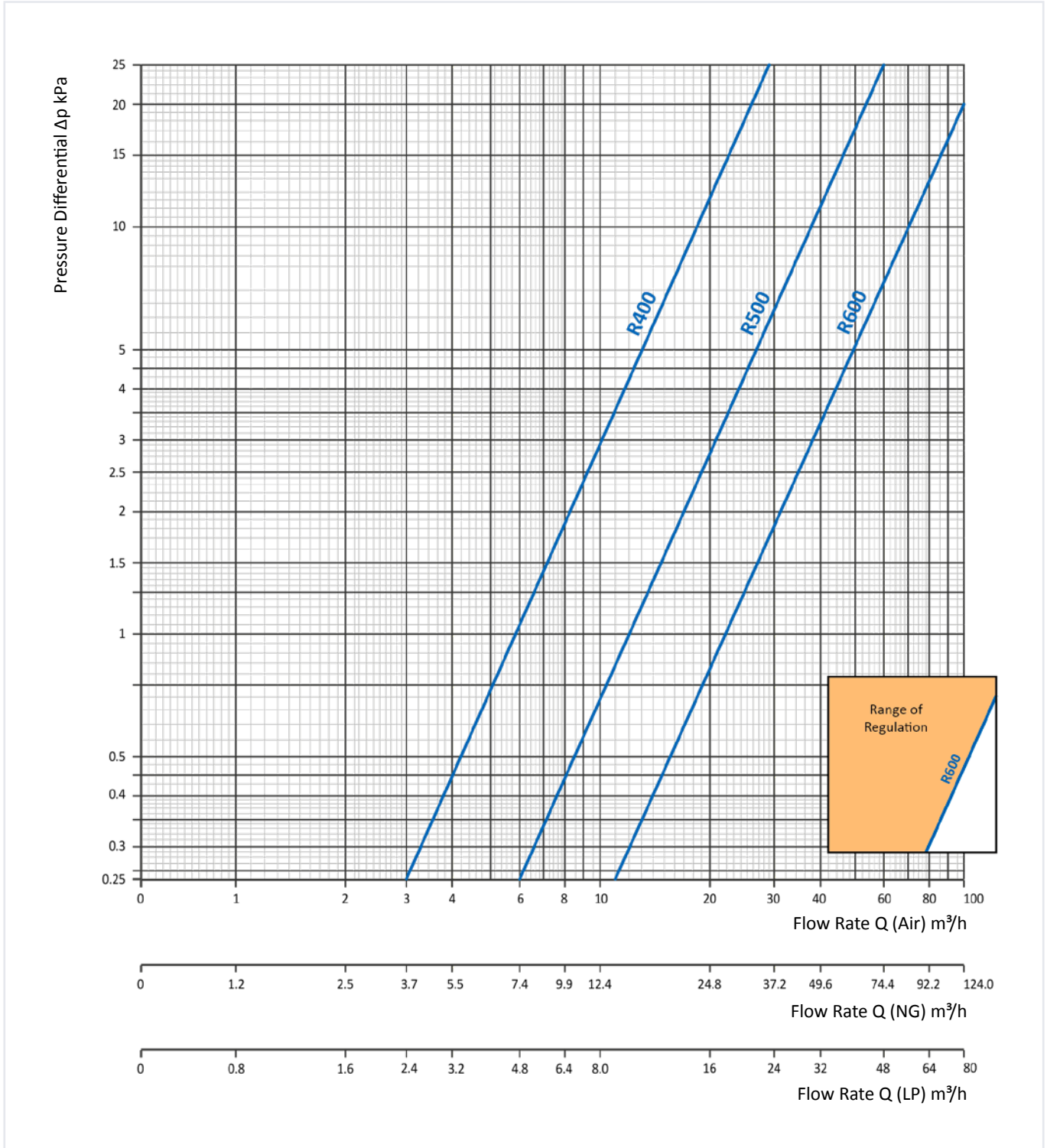
NOTE: The given flow rates are approximate values. Actual flow rates may vary somewhat from those shown.

325 Series Appliance Regulators – Lever Acting Design



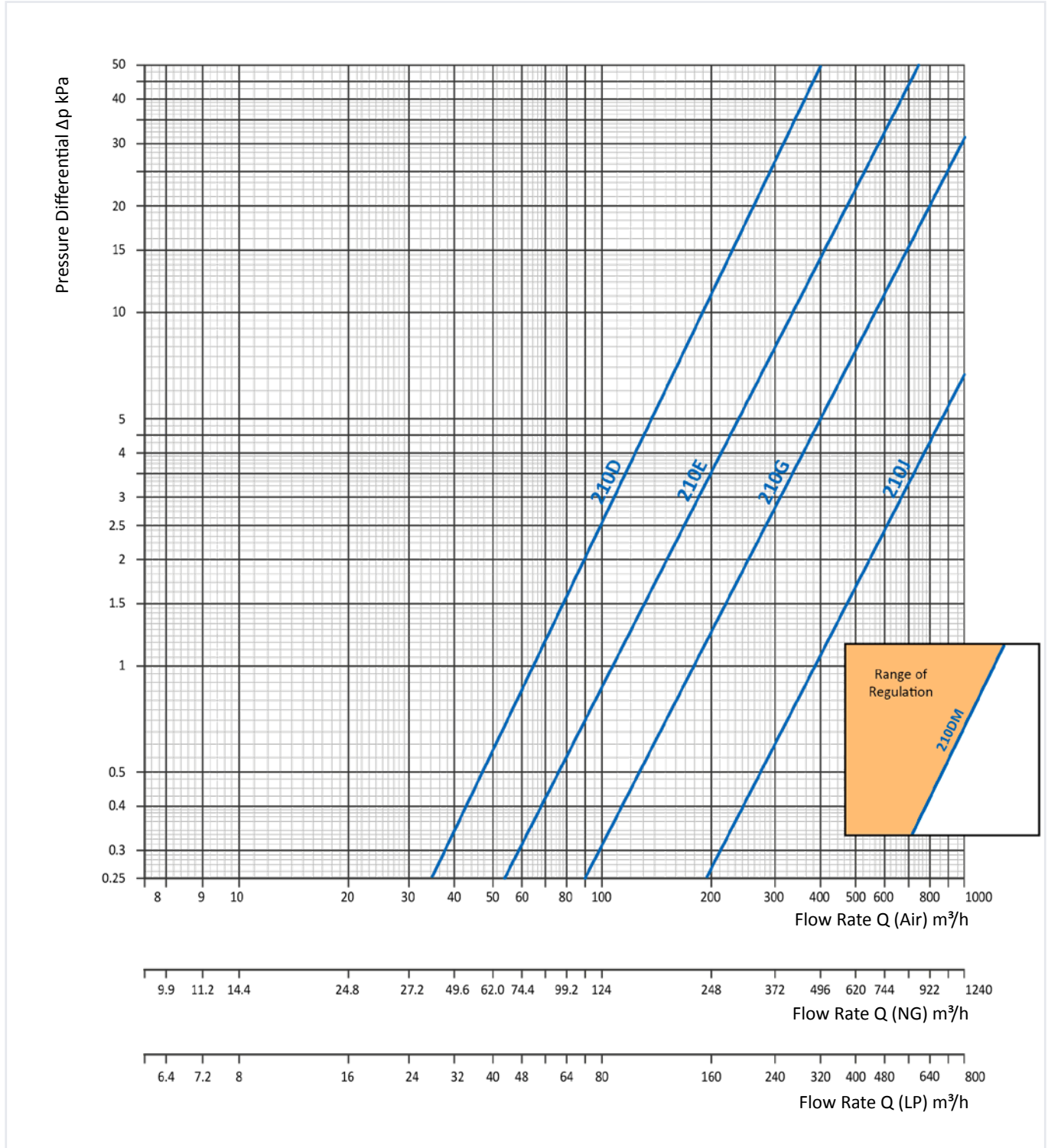
NOTE: The given flow rates are approximate values. Actual flow rates may vary somewhat from those shown.

RS Series Appliance Regulators – Balanced Valve and Zero Governor Design



NOTE: The given flow rates are approximate values. Actual flow rates may vary somewhat from those shown.

210 Series Appliance Regulators – Balanced Valve and Zero Governor Design



NOTE: The given flow rates are approximate values. Actual flow rates may vary somewhat from those shown.

DEFINITIONS

Capacity

Total load m³/h of all appliances combined.

Lockup Type

Under no flow conditions, outlet pressure will rise above adjusted pressure but will not rise to line pressure.

Maximum Capacity (Main Burner and Pilot)

Maximum capacity of a pressure regulator at which the pressure regulator will control main burner and pilot line pressure within acceptable limits.

Maximum Capacity (Main Burner Only)

Maximum capacity of a pressure regulator at which the pressure regulator will control main burner pressure within acceptable limits.

Maximum Individual Load

Largest single appliance or burner served by the pressure regulator.

Maximum Inlet Pressure

The highest inlet pressure for which the control is intended to be used.

Minimum Capacity (Main Burner Only)

Minimum capacity of a pressure regulator designed to control the flow to the main burner only.

Non-Lockup Type

Under static conditions when no gas is flowing, outlet pressure will rise to line pressure.

Pressure Differential

The difference between inlet pressure to the pressure regulator and outlet pressure from the pressure regulator. To obtain differential pressure, subtract the desired outlet pressure from available inlet pressure.

Pressure Drop

The natural loss of pressure that occurs in the pressure regulator (or in any valve or pipe) due to friction. This friction impedes fluid motion, without regard to artificial losses deliberately created by diaphragm action. The equivalent flow rate for a loss in given pressure with the pressure regulator valve in a normally wide open position.

Pressure Tap

A hose fitting incorporating a captured sealing means for testing inlet and outlet pressures. This eliminates the need for a special barb fitting.

Vent Limiter

A means that limits the flow of gas from the atmospheric chamber to the atmosphere in the event of a diaphragm rupture. This may be either a limiting orifice or a ball check vent limiting device.

- Limiting Orifice Type: A vent limiter where the flow through the limiter is the same in both directions

Gas/Air Ratio Regulators / Zero Pressure Regulators

They require an external impulse signal, such as top loading with pressure or generating vacuum in the downstream piping.

HF2000 SERIES

GAS & AIR FILTERS

Gas and air filters protect downstream controls (regulators, automatic shut-off valves) from particulate contamination. Recommended for use upstream of fittings, regulators, and controls. Applications for the residential, commercial cooking, process heating, and industrial burner industries.

Specifications

- **Pipe Sizes:**
 - Rp ½ to Rp 2 threaded connections according to ISO 7-1/EN10226-1
 - DN25 to DN150 flanged connections according to ISO 7005-2, PN 16
- **Housing Material:** Aluminum
- **Internal Components Material:** Aluminium, elastomer, galvanized wire mesh
- **Filter Insert:** Filter mat material will not allow particle infiltration equal or exceeding 50 µm (0.05 mm)
- **Filter Mat Material:** Polypropylene fleece
- **Mounting:** Suitable for multi-positional mounting, preferably with lid facing down or to the side to facilitate removal of debris during maintenance.
- **Construction and Design/Certifications:** Function according to DIN 3386, Gas Appliances Regulation (EU) 2016/426 and Pressure Equipment Directive 97/23/EC
- **Fuel Gases:** Suitable for gases of EN 437
- **Maximum Inlet Pressure:**
 - Threaded models: 100 kPa, 400 kPa
 - Flanged models: 100 kPa, 400 kPa, 600 kPa
- **Ambient Temperature Range:** -20 to 80 °C
- **Pressure Tap:** optional (depending on selected model)

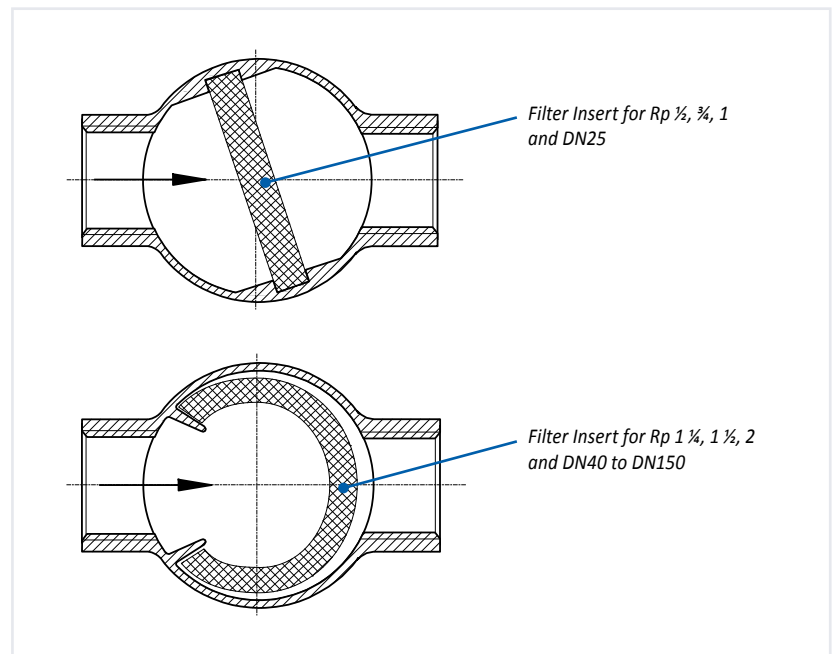
Gas Filter Service Kit

(incl. Insert, Gasket, and Screws)

Model	Service Kit Number	Min. Order Quantity
GF40M-44...	KIT-GF40M	10
GF60M-66...	KIT-GF60M	
GF60M-88...		
GF80M-1010...	KIT-GF80M	
GF80M-1212...		
GF80M-1616...		
GF25MF-88...	KIT-GF60M	
HF2000F80...	KIT-GF80MF*	5
HF2000F100...	KIT-GF100MF*	3
GF125MF-4040...	KIT-GF125MF*	2
GF150MF-4848...	KIT-GF150MF*	

* Screws not included

Filter Inserts



Dimensions

Model	Connection	Pipe Size	Space for filter mat replacement S	Dimensions			
				A	B	C	D (flanged)
GF40M-44...	Thread	Rp ½	60 mm	53 mm	69 mm	58 mm	-
GF60M-66...		Rp ¾	100 mm	94 mm	110 mm	94 mm	-
GF60M-88...		Rp 1	100 mm	94 mm	110 mm	94 mm	-
GF80M-1010...		Rp 1 ¼	150 mm	126 mm	157 mm	160 mm	-
GF80M-1212...		Rp 1 ½	150 mm	126 mm	157 mm	160 mm	-
GF80M-1616...		Rp 2	150 mm	126 mm	157 mm	160 mm	-
GF25MF-88...	Flange	DN25	100 mm	115 mm	165 mm	115 mm	14 mm
HF2000F80...		DN80	200 mm	204 mm	284 mm	215 mm	18 mm
HF2000F100...		DN100	220 mm	225 mm	339 mm	270 mm	18 mm
GF125MF-4040...		DN125	270 mm	268 mm	400 mm	323 mm	18 mm
GF150MF-4848...		DN150	310 mm	308 mm	448 mm	363 mm	22 mm



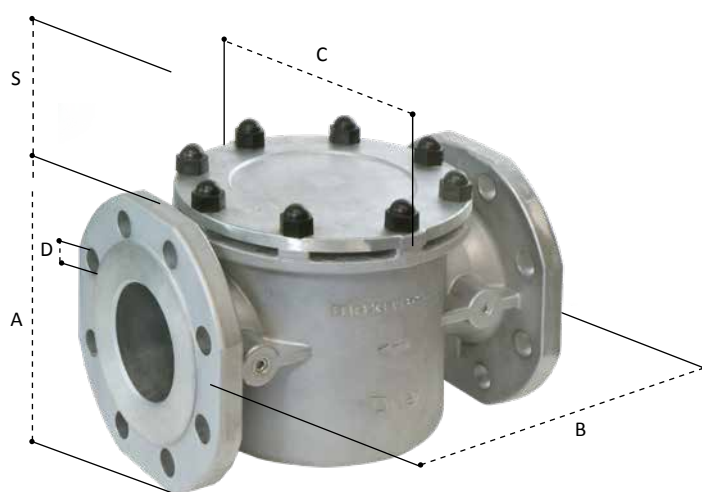
▲ GF40M...



▲ GF60M...



▲ GF80M...



▲ HF2000F80..., HF2000F100..., GF125MF..., GF150MF...

NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the filter. Actual production dimensions may vary somewhat from those shown.

GF1000 SERIES

GAS & AIR FILTERS

Gas and air filters protect downstream controls (regulators, automatic shut-off valves) from particulate contamination. Recommended for use upstream of fittings, regulators, and controls. Applications for the residential, commercial cooking, process heating, and industrial burner industries.

Specifications

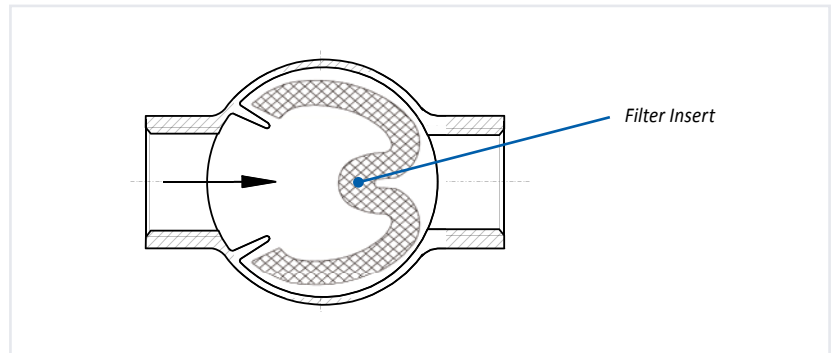
- **Pipe Sizes:** DN40 to DN65 flanged connections according to ISO 7005-2, PN 16
- **Housing Material:** Aluminum
- **Internal Components Material:** Aluminium, elastomer, galvanized wire mesh
- **Filter Insert:** Filter mat material will not allow particle infiltration equal or exceeding 50 µm (0.05 mm)
- **Filter Mat Material:** Polypropylene fleece
- **Mounting:** Suitable for multi-positional mounting, preferably with lid facing down or to the side to facilitate removal of debris during maintenance.
- **Construction and Design/Certifications:** Function according to DIN 3386, Gas Appliances Regulation (EU) 2016/426 and Pressure Equipment Directive 97/23/EEC
- **Fuel Gases:** Suitable for gases of EN 437
- **Pressure Tap:** optional (depending on selected model)
- **Maximum Inlet Pressure:** 100 kPa, 400 kPa, 600 kPa
- **Ambient Temperature Range:** -20 to 80 °C

Gas Filter Service Kit

(incl. Insert, Gasket, and Screws)

Model	Service Kit Number	Min. Order Quantity
GF1000MF40...	KIT-GF1000MF	Upon request
GF1000MF50...		
GF1000MF65...		

Filter Insert

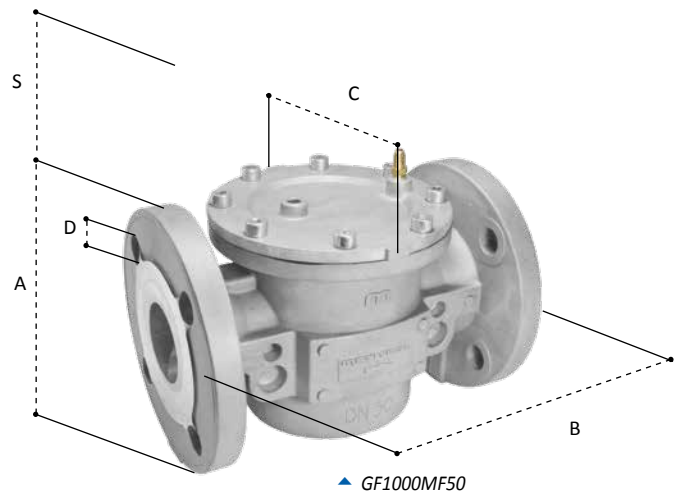


Dimensions

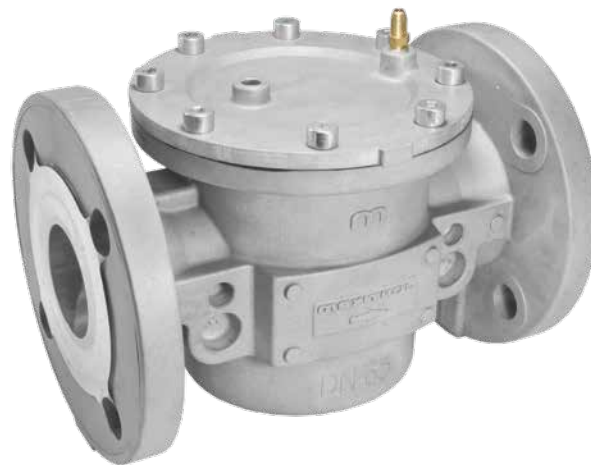
Model	Connection	Pipe Size	Space for filter mat replacement S	Dimensions			
				A	B	C	D
GF1000MF40...	Flange	DN40	150 mm	159 mm	230 mm	160 mm	18 mm
GF1000MF50...		DN50	150 mm	168 mm	230 mm	160 mm	18 mm
GF1000MF65...		DN65	150 mm	185 mm	230 mm	160 mm	18 mm



▲ GF1000MF40



▲ GF1000MF50

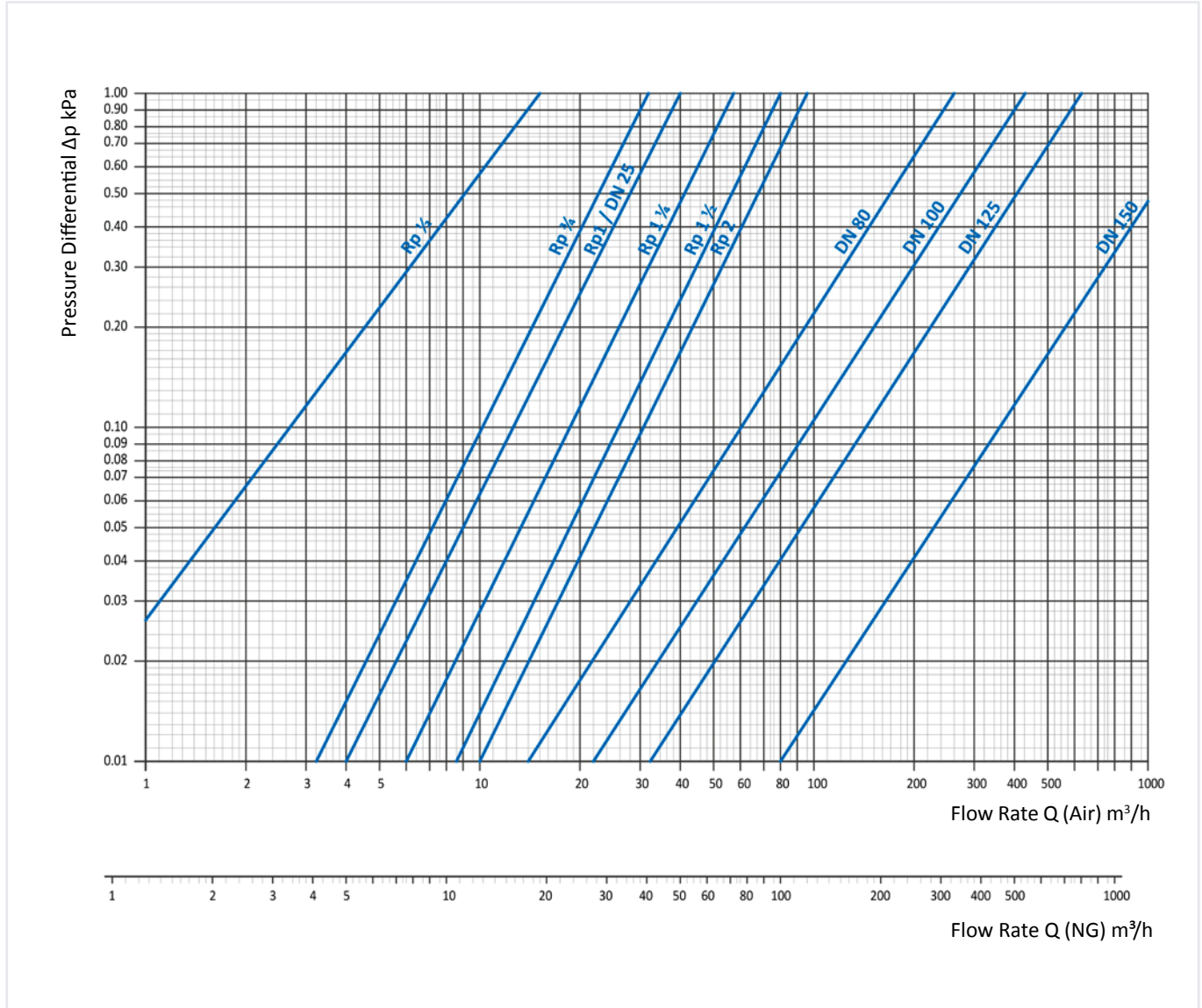


▲ GF1000MF65

NOTE: Dimensions are maximums and to be used only as an aid in designing clearance for the filter. Actual production dimensions may vary somewhat from those shown.

FLOW CHARTS GAS & AIR FILTERS

HF2000 Series



LEGEND FOR FLOW CHARTS

- Δp = Pressure Differential in kPa
- Q = Flow Rate in m³/h
- dv = Volumetric Rate of Flow
- f = Friction Factor
- ρ = Density

Pressure Units: 1 kPa = 10 mbar = 10 hPa
 Air: dv = 1.00 f = 1.00
 Natural Gas (NG): dv = 0.64 f = 1.24
 Liquid petroleum gas (LPG): dv = 1.56 f = 0.80

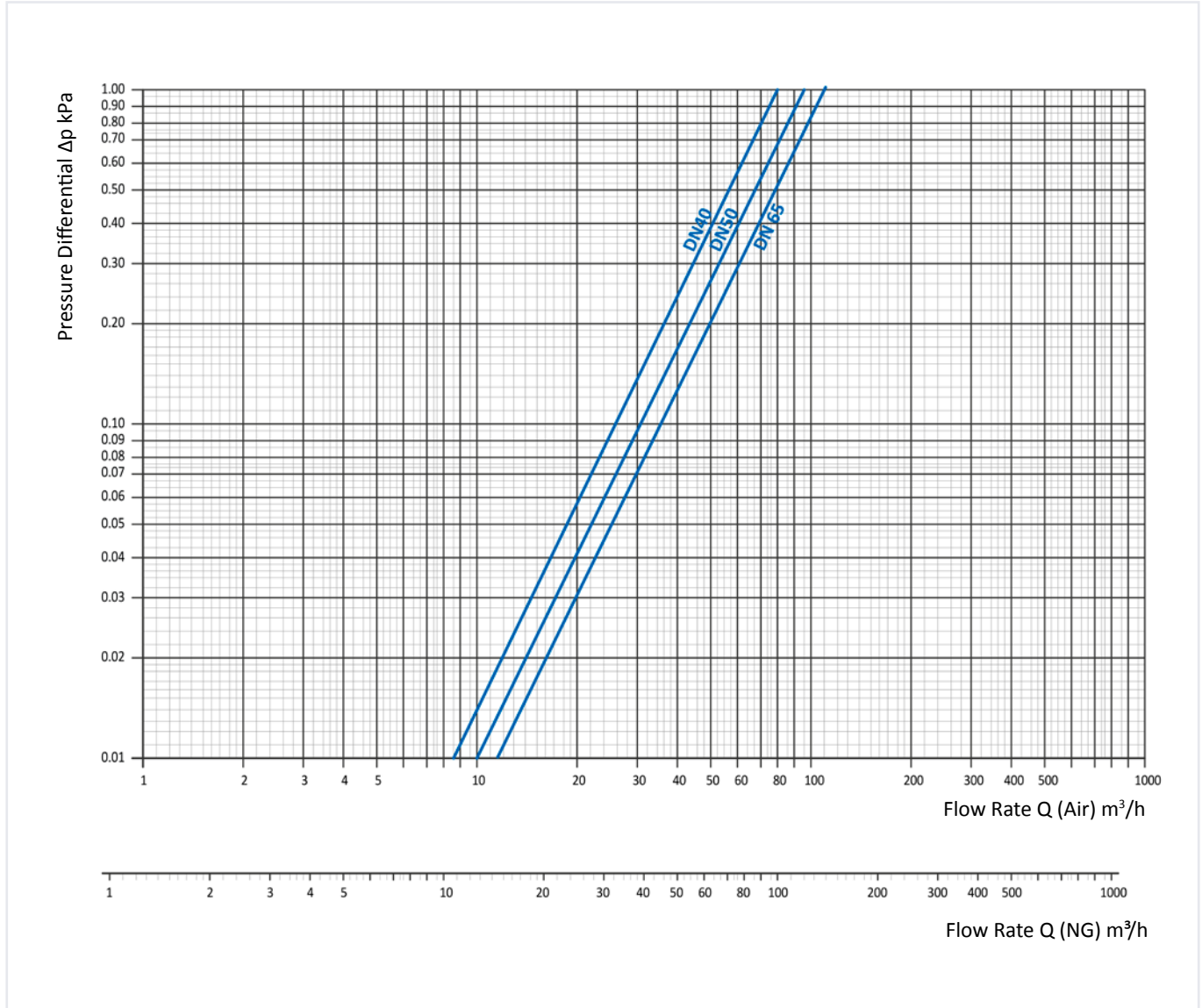
$$dv = \frac{\rho_{\text{gas}}}{\rho_{\text{air}}}$$

$$f = \sqrt{\frac{\rho_{\text{air}}}{\rho_{\text{gas}}}}$$

$$\dot{V}_{\text{gas}} = f \cdot \dot{V}_{\text{air}}$$

NOTE: The given flow rates are approximate values. Actual flow rates may vary somewhat from those shown.

GF1000 Series



NOTE: The given flow rates are approximate values. Actual flow rates may vary somewhat from those shown.

MAXITROL®

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Maxitrol Company

23555 Telegraph Road
Southfield, MI 48033
USA

T: (+1) 248 356-1400
infoNA@maxitrol.com

Maxitrol GmbH & Co. KG

Valleys Innovation Centre
Navigation Park
Abercynon CF45 4SN
United Kingdom

T: (+44) 1443 742-755
M: (+44) 7866 492-261
infoEU@maxitrol.com

Maxitrol GmbH & Co. KG

Warnstedter Str. 3
06502 Thale
Germany

T: (+49) 3947 400-0
infoEU@maxitrol.com

Maxitrol GmbH & Co. KG

Industriestr. 1
48308 Senden
Germany

T: (+49) 2597 9632-0
senden@maxitrol.com